AMENDMENT TO THE CLAIMS

CLAIM 1 (currently amended):

1. A method of allocating and deallocating memory comprising the steps of:

assigning to each basic unit of user memory a corresponding memory control block;

collecting groups of contiguous available control blocks into a plurality of linked lists, each list for storing a plurality of elements, each element comprising a ~~available~~ control block ~~groups~~ group having an associated minimum size user block;

in response to a request for a block of user memory, searching for a linked list having available ~~blocks of~~ control block groups corresponding to user ~~memory~~ blocks at least as large as the requested size;

seizing a block of user memory of the required size and making available any surplus block representing ~~the~~ a difference between the requested size of memory and the size of the seized block of user memory;

when deallocating memory, testing whether user blocks of memory immediately adjacent to the deallocated block are available and if available merging the available blocks to the block being deallocated to create a merged deallocated block; and

inserting the merged deallocated block into a linked list of available blocks of memory for containing blocks of memory of at least the size of the merged block;

whereby the adding of said surplus block and the process of creating a merged deallocated block helps to avoid fragmentation of memory.

CLAIM 2 (original):

2. The method of claim 1 wherein the step of grouping available blocks of user memory into linked lists comprises the step of:

providing a linked list for each size that is a multiple of a basic block size.

CLAIM 3 (original):

3. The method of claim 2 wherein said basic block size is 64 bytes.

CLAIM 4 (currently amended):

     4. The method of claim 2 wherein lists are provided for each <u>user</u> block size that is a multiple of a basic block size up to some limit and wherein <u>user</u> block sizes above said limit are in multiples of a superblock size, said superblock size being larger than said basic block size.

CLAIM 5 (original):

     5. The method of claim 4 wherein said superblock size is 4K bytes.

CLAIM 6 (original):

     6. The method of claim 1 in which the step of collecting available block groups into linked lists comprises the step of grouping available block groups into two-way linked lists.

CLAIM 7 (original):

     7. The method of claim 1 wherein the step of searching for a linked list having available block groups associated with user memory at least as large as the requested size comprises the steps of:

     ordering said linked lists by size;

     finding the linked list having a minimum size at least as large as the requested size; and

     subsequently searching over linked lists for blocks of memory larger than the minimum size linked list until a linked list is found having an available block of user memory.

CLAIM 8 (original):

     8. The method of claim 1 further comprising the step of:

     storing availability bits for each basic unit of user memory;

     in case said memory control blocks are inadvertently overwritten, recreating a new set of linked lists from data of said availability bits.

CLAIM 9 (canceled)

CLAIM 10 (currently amended):

10. The method of claim 1 ~~wherein user memory is in one contiguous block and control memory is in a separate contiguous block and~~ wherein addresses of each basic unit of user memory and each control block are related by a corresponding distance from a starting point of said user memory and said control block memory.

CLAIM 11 (currently amended):

11. ~~Apparatus for allocating and deallocating~~ <u>A</u> memory <u>arrangement</u> comprising:

<u>a</u> <u>plurality</u> <u>of</u> <u>contiguous</u> <u>basic</u> <u>units</u> <u>of</u> <u>user</u> <u>memory:</u>

~~means for assigning to each basic unit of user memory~~ a corresponding memory control block <u>assigned</u> <u>to</u> <u>each</u> <u>basic</u> <u>unit</u> <u>of</u> <u>memory;</u>

~~means for collecting~~ groups of contiguous available control blocks <u>are</u> <u>collected</u> into <u>a</u> <u>plurality</u> <u>of</u> linked lists, each list for storing <u>a</u> <u>plurality</u> <u>of</u> <u>elements,</u> <u>each</u> <u>element</u> <u>comprising</u> <u>a</u> ~~available~~ control block ~~groups~~ <u>group</u> having an associated minimum size <u>user</u> <u>block;</u>

~~means, in response to a request for a block of user memory, for searching~~ for <u>responding</u> <u>to</u> <u>a</u> <u>request</u> <u>for</u> <u>a</u> <u>block</u> <u>of</u> <u>user</u> <u>memory,</u> <u>an</u> <u>element</u> <u>of</u> a linked list having <u>an</u> available ~~blocks~~ <u>block</u> of user memory at least as large as ~~the~~ <u>a</u> requested size <u>of</u> <u>an</u> <u>allocation</u> <u>request;</u>

~~means for seizing~~ <u>when</u> <u>seizing</u> a block of user memory of the required size ~~and~~ <u>indicated</u> <u>by</u> <u>said</u> <u>linked</u> <u>list,</u> making available any surplus representing ~~the~~ <u>a</u> difference between ~~the~~ <u>a</u> requested ~~size of memory~~ <u>allocation</u> <u>size,</u> and ~~the~~ <u>a</u> size of the seized block of user memory;

when deallocating memory, ~~means for~~ testing whether user blocks of memory immediately adjacent to ~~the~~ <u>a</u> deallocated block are available and if available merging the available blocks to the block being deallocated to create a merged deallocated block; and

~~means for~~ inserting the merged deallocated block into a linked list of available <u>contiguous</u> <u>control</u> blocks ~~of memory~~ for ~~containing~~ blocks of <u>user</u> memory of <u>at</u> <u>least</u> the size of the merged <u>deallocated</u> block~~;~~

~~whereby the adding of said surplus block and the process of creating a merged deallocated block helps to avoid fragmentation of memory.~~

CLAIM 12 (currently amended):

12. The ~~apparatus~~ memory arrangement of claim 11 wherein ~~the means for grouping available blocks of user memory into linked lists~~ said plurality of linked lists comprises:

~~means for providing~~ a linked list for each size that is a multiple of a basic block size.

CLAIM 13 (currently amended):

13. The ~~apparatus~~ memory arrangement of claim 12 wherein said basic block size is 64 bytes.

CLAIM 14 (currently amended):

14. The ~~apparatus~~ memory arrangement of claim 12 wherein lists are provided for each user block size that is a multiple of a basic block size up to some limit and wherein for user block sizes above said limit, lists are provided in multiples of a superblock size, said superblock size being larger than said basic block size.

CLAIM 15 (currently amended):

15. The ~~apparatus~~ memory arrangement of claim 14 wherein said superblock size is 4K bytes.

CLAIM 16 (currently amended):

16. The ~~apparatus~~ memory arrangement of claim 11 ~~in which the means for collecting available block groups into~~ wherein said linked ~~lists comprises means for grouping available block groups into~~ are two-way linked lists.

CLAIM 17 (currently amended):

17. The ~~apparatus~~ memory arrangement of claim 11 wherein ~~the means for searching for a linked list having available block groups associated with user memory at least as large as the requested size comprises~~:

~~means for ordering~~ said linked lists are ordered by size;

~~means for finding the~~ a linked list having a minimum size at least as large as the requested size is first searched; and

~~means for~~ subsequently, ~~searching over~~ linked lists for blocks of memory larger than the minimum size linked list are searched until a linked list is found having an available block of user memory.

CLAIM 18 (currently amended):

18. The ~~apparatus~~ <u>memory</u> <u>arrangement</u> of claim 11 further comprising:

~~means for storing~~ availability bits for each basic unit of user memory;

in case said memory control blocks are inadvertently overwritten, ~~means for~~ ~~recreating~~ a new set of linked lists <u>can</u> <u>be</u> <u>created</u> from data of said availability bits.

CLAIM 19 (canceled)

CLAIM 20 (currently amended):

20. The ~~apparatus~~ <u>memory</u> <u>arrangement</u> of claim 11 ~~wherein user memory is in~~ ~~one contiguous block and control memory is in a separate contiguous block and~~ wherein addresses of each basic unit of user memory and each control block are related by a corresponding distance from a starting point of said user memory and said control block memory.